REMARKS/ARGUMENTS

Claims 1-12 are pending. Claims 1, 7-9 and 12 have been amended. Reconsideration is respectfully requested.

1. Rejection of Claims 7-12 Under §112

Claims 7-12 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, because claim 7 recites first and second processors whereas the specification does not disclose a multi-processor structure. Claim 7 has been amended to make reference only to a single processor.

2. Rejection of Claims 1-3, 6-9 and 12 Under §103(a)

Claims 1-3, 6-9 and 12 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Feng (Electronics Letters 31st August, 1995, pp. 1542-1543) in view of Fan (Optical Eng. 37(5), pp. 1563-1570. The Applicant respectfully traverses this rejection.

The present application is directed to a method and system for distributing candidate motion vectors. As recited by claim 1 (as amended), the method includes:

- dividing a picture frame into a plurality of segments using a processor, each segment comprising a plurality of pixel blocks;
- measuring local motion complexity for each segment using the processor; and
- assigning a number of candidate motion vectors to pixel blocks within each segment based on the measured local motion complexity using the processor, wherein the number of candidate motion vectors assigned to pixel blocks within one of the segments is different from the number of candidate motion vectors assigned to pixels blocks within another one of the segments.

Claim 7 recites the system configured to perform the method of claim 1. This technique of assigning candidate motion vectors to pixel blocks based upon local motion complexity provides the advantage of allocating motion vectors where resources to process motion vectors can be

limited. (See page 2, lines 3-7.) This non-uniform distribution of candidate motion vectors allows for a greater number of motion vectors to be distributed to pixel blocks in those portions of the picture where greater resources should be allocated (i.e. allocation of greater numbers of motion vectors to higher complexity portions of the scene). (See page 2, lines 17-28.) Claims 1 and 7 have been amended to clarify the non-uniform distribution of candidate motion vectors based upon measured local motion complexities.

In contrast, Feng discloses a technique for block matching (i.e. finding which block in a previous frame matches that of a particular block in a present frame), and in particular an algorithm for adjusting the search origin for a pixel block. (See p. 1542, last full paragraph.) The technique involves determining, for each candidate block in the search area, the displaced block difference (DBD), whereby the block with the lowest DBD is selected as the matching block and the corresponding displacement becomes the motion vector. (See p. 1542, top of second column).

Nowhere in Feng is it disclosed or suggested that a number of candidate motion vectors be assigned to pixel blocks within each segment based on local motion complexities, where the assigned numbers of candidate motion vectors vary among the various segments (i.e. a non-uniform distribution of candidate motion vectors based upon measured local motion complexities). Therefore, it is respectfully submitted that Feng fails to disclose the assignment of candidate motion vector numbers as recited in claims 1 and 7. Fan does not cure the deficiencies of Feng, as it is apparently relied upon solely for the concept of dividing a picture frame into a plurality of segments each of which containing a plurality of pixel blocks.

Additionally, the Applicant traverses the Examiner's contention that it would have been obvious to combine the division of the picture into segments of Fan to the Feng method, as such a modification would render Feng much less accurate and inefficient (increased efficiency was cited as the motivation for the combination). Specifically, such a modification would result in the method identifying matching segments of pixel blocks instead of identifying matching pixel blocks themselves, and assigning motion vectors at the sector level instead of at the pixel block

level. The Applicant respectfully submits one skilled in the art would not find sector level motion estimation more efficient than pixel block level motion estimation as stated by the Examiner.

It is therefore respectfully submitted that claims 1 and 7 are not rendered obvious by Feng and Fan, and that this rejection should be withdrawn. Claims 2-3, 6, 8-9 and 12 depend from claims 1 or 7, and are thus considered allowable for the reasons set forth above. In addition, the combination of Feng and Fan fail to disclose elements of these dependent claims. For example, claims 3 and 9 recite that the assigning of candidate vector numbers comprises using a distribution function configured to assign the number of candidate vectors based on the measured local motion complexity of each segment. The Examiner states that the assignment using the claimed distribution function is disclosed by Feng's search range adaptation on p. 1542. The Applicant respectfully traverses. Feng's search range adaptation is a technique for adjusting the search range "according to the motion content of the block," and is clearly not a distribution function for assigning candidate motion vector numbers.

The Applicant therefore submits that claims 1-3, 6-9 and 12 are not rendered obvious by Feng and Fan.

3. Rejection of Claims 4-5 Under §103(a)

Claims 4-5 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Feng in view of Fan and further in view of U.S. Patent 5,355,221 (Cohen). The Applicant respectfully traverses this rejection.

Claim 4-5 depend upon claim 1, and are therefore considered allowable for the reasons set forth above with respect to claim 1. The addition of Cohen fails to cure the deficiencies of Feng and Fan. Moreover, Cohen fails to teach or suggest the distribution function being based upon maximum, minimum and average values (or predetermined values thereof) of the measured sum-of-absolute differences of the segments, as recited in claims 4-5.

4. Rejection of Claims 7-9 and 12 Under §103(a)

Claims 7-9 and 12 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Feng in view of Fan and further in view of U.S. Patent 5,959,689 (De Lange). The Applicant respectfully traverses this rejection.

Claim 7 is patentably distinguishable from Feng and Fan as set forth in Part 2 above. The addition of De Lange fails to cure the deficiencies of Feng and Fan.

Claims 8-9 and 12 depend upon claim 7, and are therefore considered allowable for the reasons set forth above with respect to claim 7. The addition of De Lange fails to cure the deficiencies of Feng and Fan. Further, the combination of Feng, Fan and De Lange fail to disclose elements of these dependent claims. For example, claim 9 recites that the assigning of candidate vector numbers comprises using a distribution function configured to assign the number of candidate vectors based on the measured local motion complexity of each segment. The Examiner states that the assignment using the claimed distribution function is disclosed by Feng's search range adaptation on p. 1542. The Applicant respectfully traverses. Feng's search range adaptation is a technique for adjusting the search range "according to the motion content of the block," and is clearly not a distribution function for assigning candidate motion vector numbers.

5. Rejection of Claims 10-11 Under §103(a)

Claims 10-11 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Feng in view of Fan, further in view of Cohen, and further in view of De Lange. The Applicant respectfully traverses this rejection.

Claims 10-11 depend upon claim 7, and are therefore considered allowable for the reasons set forth above with respect to claim 7. The addition of Cohen and De Lange fails to cure the deficiencies of Feng and Fan.

For the foregoing reasons, it is respectfully submitted that the claims are in an allowable form, and action to that end is respectfully requested.

Respectfully submitted,

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